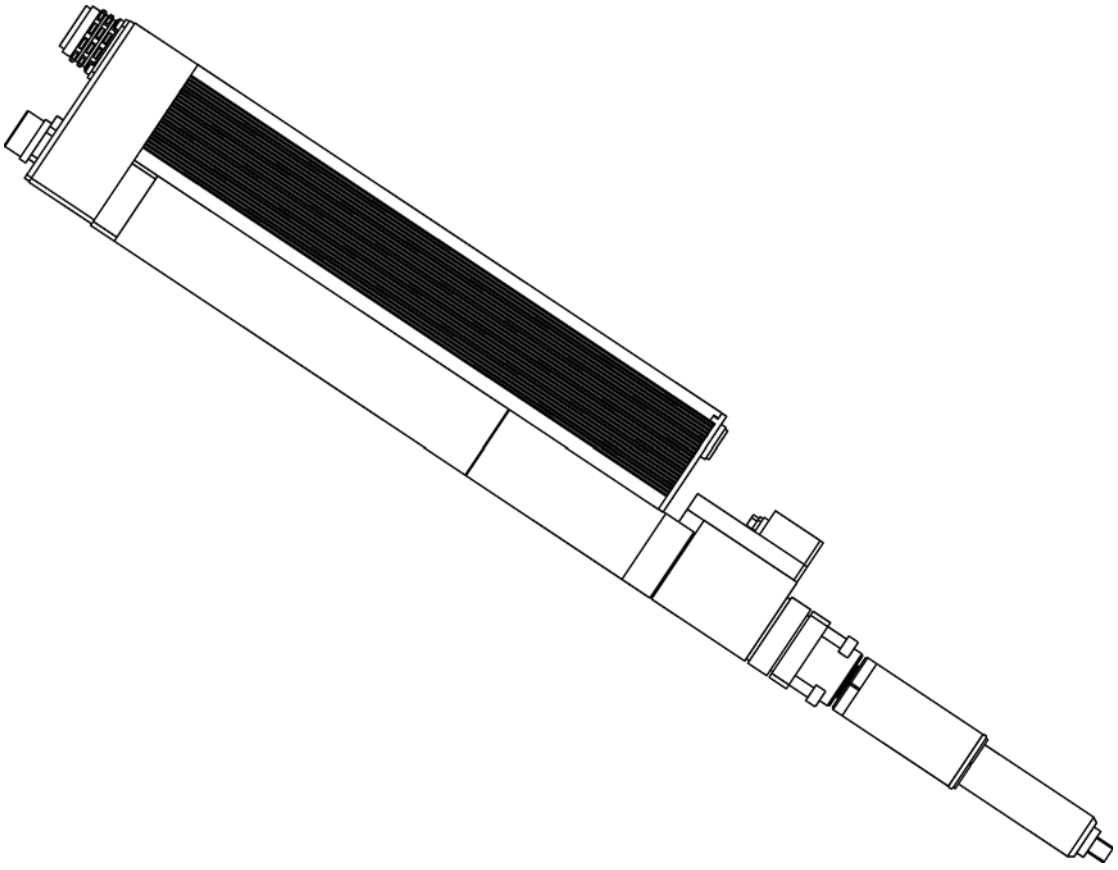
Service Manual
P2079WA/EN
2010-11

DGD-Intelligente-Spindel

BTSE Series



For additional product information visit our website at http://www.apextoolgroup.com

About this service manual

This service manual is the – translation of the original service manual – and provides important information on safe and correct installation.

Secondary information

P2086MA	Assembly Instruction DGD-Intelligent Spindle
P1919E	Assembly instructions Supply module CPS3
P1908E	Assembly instructions Tightening Torques – Assembly of Components (Built-in Nutrunner)
P2078MA	Assembly instructions TSE/TUSE tightening module
P2075EL	Data sheet Transducer
P2074BA	Instruction manual Telemetrie system
PL12EN-1004	Quick Start mPro400GC
P2076EL	Spare parts sheet Attachment
P1913E	Spare parts sheet Gearing
P1914E	Spare parts sheet Motor
P2085EL	Spare parts sheet Tightening module TSE/TUSE
P2080EL	Spare parts sheet Transducer
P2077SB	System handbook Modular fastening system mPro400GC-DGD-Intelligente-Spindel
PL12EN-1001	System manual nutsetter control unit mPro400GC

Symbols in text

➔	Identifies instructions to be followed.
•	Identifies lists.

Abbreviations

mPro400GC	Nutsetter control
PDB-CPS…	Power distribution box
TSE/TUSE	Tightening module
CPS3	Supply module
DGD-IS	DGD intelligent spindles

Symbols in graphics:

⟵	Identifies movement in a direction.
⇩	Identifies function and force.

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1 Safety

CAUTION!

This document is only valid in conjunction with the assembly instructions for the DGD intelligent spindle.

➔ Read the chapter on safety!

DANGER! High leakage current –
Fatal electric shock could occur!

➔ Always disconnect the power supply before performing maintenance work on the DGD-IS and thePDB-CPS….

➔ Always disconnect the system cable, motor or motor cable from the PDB-CPS… or DGD-IS before making throughput, resistance and short circuit measurements.

➔ Do not attempt to repair possible faults on the fastening system by yourself if you do not have the required knowledge! Inform the local repair center or your Sales & Service Center.

WARNING!

High temperature –
the motor on the DGD-IS may heat up and cause burns during removal.
(max. engine temperature 90 °C). Wear gloves.

2 Service schedule

Only trained personnel are permitted to perform maintenance. Regular maintenance reduces operating faults, repair costs and downtime. In addition to the following service plan, implement a safety-related maintenance program that takes the local regulations for repair and maintenance for all operating phases of the tool into account.

After … fastening cycles[1)]	Actions
500.000	Only for 4B(U)TSE-4B…A-4M…B-4WM…B: ➔ Send DGD-IS for examination and recalibration to Sales & Service Center.
700.000	Only for 3B(U)TSE-3B300A-3M2B-3WM2B and 2B(U)TSE-2B200A-…-2WM3B: ➔ Send DGD-IS for examination and recalibration to Sales & Service Center.
1 million	Optical control: Check DGD-IS for liquid tightness. ➔ Check DGD-IS for tight fit. ➔ Check tool connector and fixing of the tool plate for tight fit. ➔ Use grease-dissolving agent to clean the gearing components and then regrease, see Grease lubricants according to DIN51502/ISO3498, Seite 6. Amount of grease: • Size 1: 7 cm³ • Size 2: 18 cm³ • Size 3: 28 cm • Size 4: 35 cm³ ➔ Recommendation: Recalibrate tool, see 12.1 Recalibration, Seite 76. At …BUTSE…: ➔ Check tooth belt and ball bearing for wear and replace if necessary.
3 million	➔ General overhaul. Send it to Sales & Service Center.

1) For the number of fastening cycles, refer to the counter display in 7.3.4 Administration submenu, Seite 27

2.1 Lubrication

In order to ensure faultless functioning and a long service life, it is absolutely necessary to use the right type of oil according to the table.

Grease lubricants according to DIN51502/ISO3498

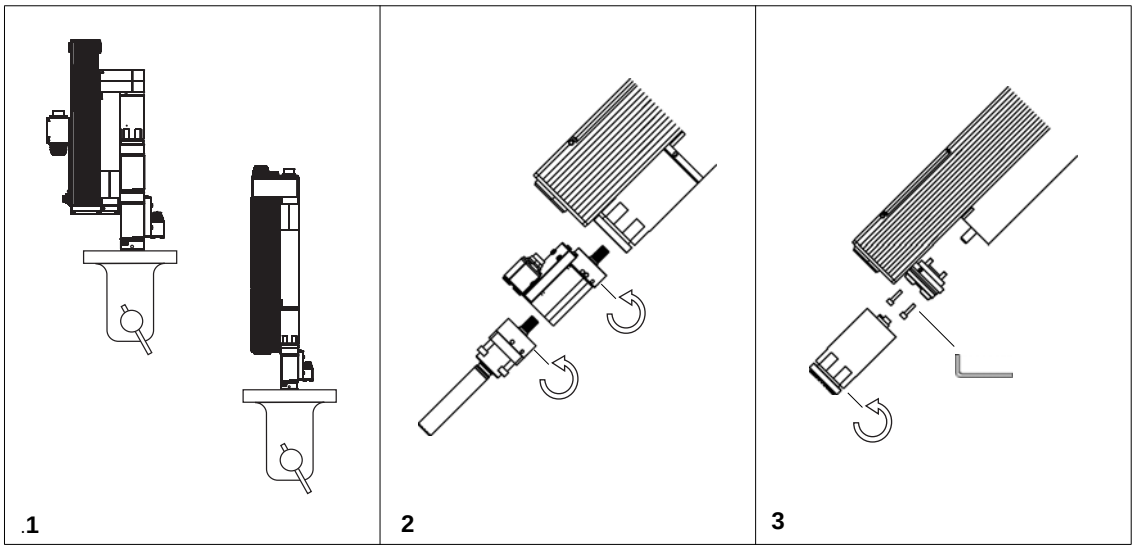
Lubrication point	Part no.	Pack. Unit [kg]	DIN / ISO	ARAL	BP	elf	Mobil	KLUBER LUBRICATION	SHELL
	912554	15	G-POH	Aralub FD00	Ener-grease HTO	GA 0 EP Expa 0	Mobilplex 44		Special Gearing H
	933027	1	KP1K					Microlube[1)] GL 261	

1) Initial lubrication Cooper Power Tools GmnH & Co. OHG

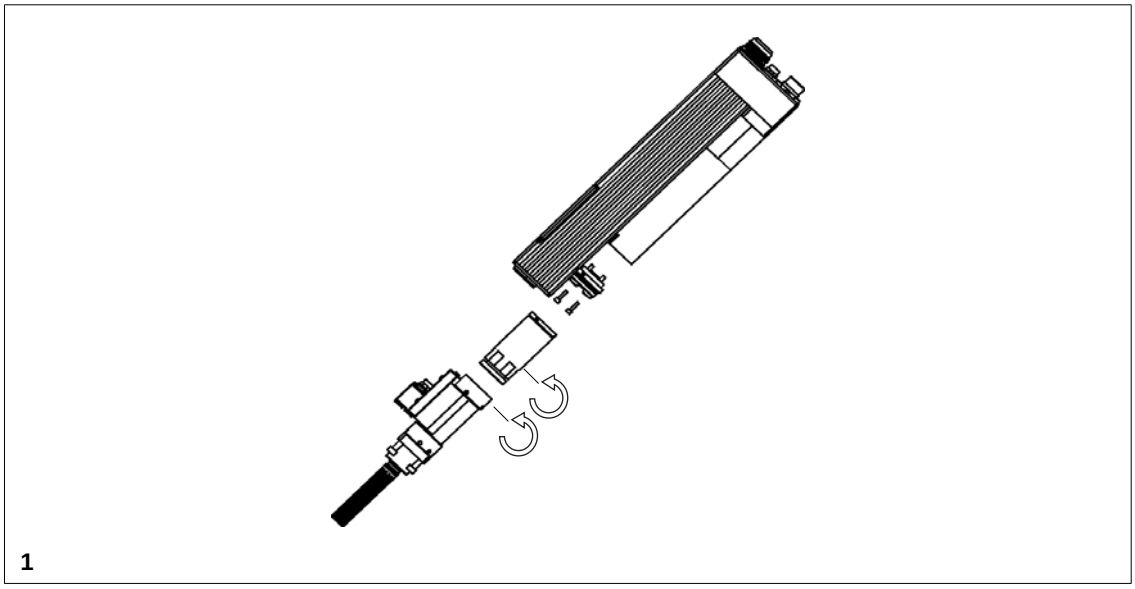
3 Removing the DGD-IS

- ➔ Loosen and remove plug connectors.
- ➔ Remove the complete DGD-IS from the fastening station.
- ➔ Secure the spanner contact surfaces on the nutsetter spindle or component in a vice. Place in position, do not tighten!
- ➔ Turn the cap nut counterclockwise. Hook wrench, see table Seite 8.
- ➔ Loosen the components.

3.1 Dismantling the DGD-IS into components



3.2 Removing the gearing from the DGD-IS



4 Installing the DGD-IS

NOTE

Before replacing a component

➔ always carry out a machine capability study (MFU).

After assembly

➔ check the calibration of the torque transducer.

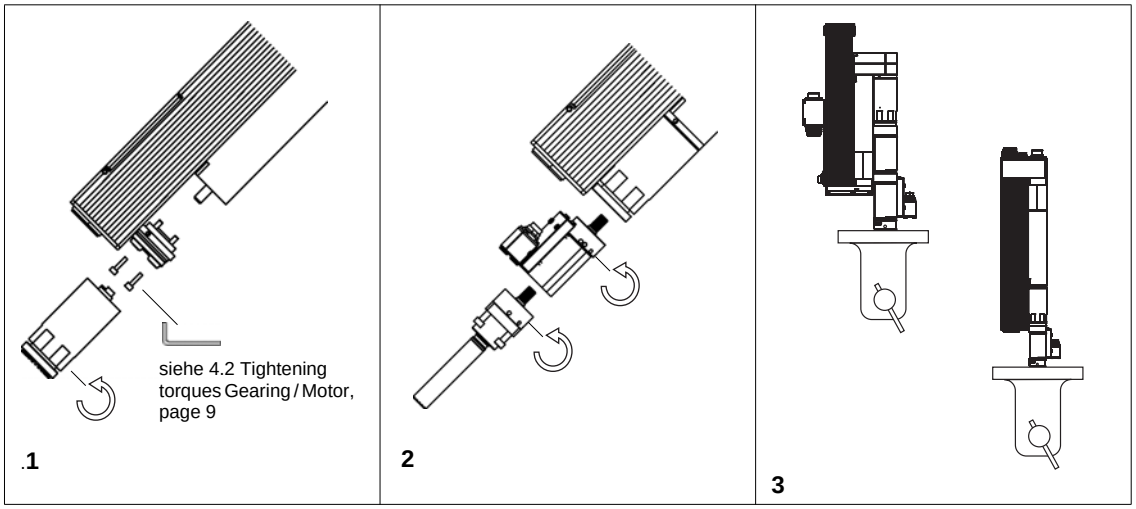
➔ check the function of the angle encoder.

We recommend servicing by Sales & Service Center.

If space is confined by positioning multiple DGD-IS, you can

- Turn size 1 in 15° increments.
- Turn sizes 4 to 2 in 10° increments.

➔ Position the DGD-IS components together via flat toothed interfaces. Place in position, do not tighten!



4.1 Tightening torques lock nut

Assemble the components in reverse order to the removal sequence.

CAUTION!

Risk of flying parts.
Components of the DGD-IS may rotate, come loose and cause injury.
Observe the tightening torque of the cap nuts. The tightening torque is the same for all sizes.

Size	Tightening torque tightening torque Nm ±5%	Tightening torque adjustment[1)] Nm ±5%	Hook wrench		Torque wrench Order no.
			Order no.	■	
1	50	43	933336	9 × 12	933340
2	85	73	933337		
3	85	73	933338		
4	110	92	933339		

1) Different setting due to leverage effect of the hook wrench

4.2 Tightening torques Gearing / Motor

Size	Tightening torque Nm	Order no.	Size
1	2.6 – 3.2	913947	3
2	2.9 – 3.2		
3	9 – 11	920533	5
4	9 – 11		

5 Recalibrating the nutsetter data

The nutsetter data is stored in the service memory. The service memory is located in the transducer components …M…B, offset attachment …VM…B and angle head attachment …WM…B in the DGD-IS.

NOTE

Only trained personnel are permitted to replace these components. Otherwise there is a risk that data without a system reference is stored in the service memory of a transducer (e.g. incorrect nutsetter type and serial number, incorrect fastening count, incorrect repair data, etc.).

NOTE

The service memory of new components …M…B, …VM…B, …WM…B does not contain nutsetter data (installation possible in different types of DGD-IS). As a spare part, the transducer is not configured for self-identification via the nutsetter control unit PDB-CPS….
In this case, the nutsetter data must be entered in the service memory manually using the nutsetter control unit.
No limits are imposed on the torque measuring functions.

➔ To recalibrate the type-specific nutsetter data, please send the DGD-IS to Sales & Service Center. Only this will ensure that after the service work, any required nutsetter data update is carried out properly.

6 Disposal

CAUTION!

Injuries and environmental damage from improper disposal.
Components of the DGD-IS pose risks to the health and the environment.

- ➔ The DGD-IS contains components that can be reused as well as components that require special disposal. Separate the components and dispose of them by segregating them clearly.
- ➔ Catch auxiliary materials (oils, greases) when drained and dispose of them properly.
- ➔ Separate the components of the packing and dispose of them by segregating them clearly.
- ➔ Follow the locally applicable regulations.

Observe generally valid disposal guidelines such as, in Germany, the Electrical and Electronic Equipment Act (ElektroG):

- ➔ Hand in the DGD-IS at your company collection point or return to Sales & Service Center.

Sales & Service Centers

Note: All locations may not service all products. Please contact the nearest Sales & Service Center for the appropriate facility to handle your service requirements.

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